LISTING OF CLAIMS:

This listing of claims will replace all prior versions and listings of claims in the application:

1. (Currently amended) A method for melting inorganic materials, comprising:

introducing the inorganic materials into a melting unit with cooled walls, the melting unit being a skull crucible,

selecting a temperature T_{eff} at which an energy consumption per unit weight of the inorganic materials to be melted is at a minimum,

selecting a temperature of a melt in the melting unit in a range from T_{eff} - 20% to T_{eff} + 20%, and

selecting a throughput to be adapted to a required residence time.

2. (Currently amended) The method as claimed in claim 1, wherein the step of selecting a temperature T_{eff} comprises selecting the temperature T_{eff} according to the formula:

$$(1) \quad dE_{tot}/dT \Big|_{T=T_{eff}} = 0 = dE_N/dT \Big|_{T=T_{eff}} + dE_V/dT \Big|_{T=T_{eff}}$$

where E_N denotes a useful heat per unit weight of the inorganic materials and E_V denotes the energy loss per unit weight of the inorganic materials, the method further comprising controlling the melting unit so that the temperature of the melt is in the range from T_{eff} - 20% to T_{eff} + 20%.

3. (Previously presented) The method as claimed in claim 2, wherein the useful heat per unit weight has a derivative according to temperature, the method comprising selecting the useful heat per unit weight according to the formula: $dE_n/dT = c_p$, where c_p denotes a specific heat capacity of the melt.

4. (Previously presented) The method as claimed in claim 2, wherein the energy loss per unit weight has a derivative according to temperature, the method comprising selecting the energy loss per unit weight according to the formula: $dE_V/dT = k\, F_0\, 1/\rho\, \tau_0\, e^{+E/T} + k\, T\, F_0\, 1/\rho\, \tau_0\, (-E/T^2)\, e^{+E/T}$, where k denotes a total transfer of heat through the walls of the melting unit, $F_0 = F/V$ denotes a surface to volume ratio of the melt, ρ denotes a density of the melt, τ_0 denotes the required residence time at a reference temperature T_0, and E denotes a constant corresponding to a characteristic activation temperature.

5. (Previously presented) The method as claimed in claim 1, further comprising feeding thermal energy directly to the melt.

6. (Original) The method as claimed in claim 5, wherein the melt is additionally mixed in the melting unit.

7. (Original) The method as claimed in claim 6, wherein the melt is agitated using a stirrer and/or by bubbling.

8. (Previously presented) The method as claimed in claim 6, further comprising generating a convective flow in the melt.

9. (Previously presented) The method as claimed in claim 8, wherein the convective flow is produced by setting a viscosity of less than 10^3 dPas and a melt temperature difference between an inner region of the melt and an outer region of the melt of greater than 150 K.

10. (Previously presented) The method as claimed in claim 5, further comprising supplying the inorganic materials in the form of a batch, which is placed onto a surface of the melt.

11. (Cancelled).

12. (Previously presented) The method as claimed in claim 10, wherein the batch is added in the form of pellets.

13. (Previously presented) The method as claimed in claim 1, further comprising refining the melt.

14. (Previously presented) The method as claimed in claim 13, further comprising producing a convective flow in the melt.

15. (Previously presented) The method as claimed in claim 14, wherein the convective flow is produced by setting a viscosity of less than 10^2 dPas and a melt temperature difference between an inner region of the melt and an outer region of the melt of greater than 250 K.

16. (Previously presented) The method as claimed in claim 13, wherein the step of introducing the inorganic materials into the crucible comprises introducing the materials from one side of the crucible at a melt bath surface and discharging the melt on an opposite side at the melt bath surface.

17. (Previously presented) The method as claimed in claim 1, wherein the inorganic materials are refined using a refining agent.

18. (Previously presented) The method as claimed in claim 1, further comprising continuously feeding and removing the inorganic materials to and from the melt.

19. (Previously presented) The method as claimed in claim 1, wherein the temperature T_{eff} is determined for the melting-down of a batch.

20. (Withdrawn) The method as claimed in claim 19, wherein the temperature T_{eff} is determined for a melt which is additionally mixed.

21. (Previously presented) The method as claimed in claim 19, wherein the temperature T_{eff} is determined for a melt which has a viscosity of less than 10^3 dPas and is melted in a unit at which a temperature difference in the melt between an inner region of the melt and an outer region of the melt of greater than 150 K.

22. (Withdrawn) The method as claimed in claim 1, wherein the temperature T_{eff} is determined for refining the melt.

23. (Withdrawn) The method as claimed in claim 22, wherein the temperature T_{eff} is determined for a melt which has a viscosity of less than 10^3 dPas and is melted in a unit at which a temperature difference in the melt between an inner region of the melt and an outer region of the melt of greater than 150 K.

24. (Withdrawn) The method as claimed in claim 22, wherein the temperature T_{eff} is determined for a melt in which molten material is introduced into a crucible from one side of the crucible at a melt bath surface and is discharged again on an opposite side of the crucible at the melt bath surface.

25. (Previously presented) The method as claimed in claim 1, further comprising feeding thermal energy directly to the melt.

26. (Previously presented) The method as claimed in claim 25, wherein the thermal energy is fed to the melt by direct conductive heating.

27. (Withdrawn) The method as claimed in claim 25, wherein the thermal energy is fed to the melt by direct inductive heating.

28. (Previously presented) The method as claimed in claim 1, wherein at least one region of the melt is heated to more than 1700°C.

29. (Previously presented) The method as claimed in claim 2, wherein the temperature of at least one region of the melt is selected to be less than or equal to a temperature at which the useful heat and the energy loss per unit weight are equal.

30-31. (Cancelled).

32. (Previously presented) The method as claimed in claim 1, wherein the required residence time comprises a melt-down time.

33. (Withdrawn) The method as claimed in claim 1, wherein the required residence time comprises a refining time.

34-49. (Cancelled).

50. (Currently amended) A method for melting inorganic materials in a melting unit with cooled walls, comprising:

selecting a temperature T_{eff} at which an energy ~~consumption per unit weight of the inorganic materials~~ demand per unit weight of finished molten material is at a minimum,

selecting a temperature of a melt in the melting unit in a range from T_{eff} - 20% to T_{eff} + 20%,

cooling the cooled walls to produce a skull layer of the melt on the cooled walls, and

selecting a throughput to be adapted to a required residence time.

51. (New) A method for melting inorganic materials in a melting unit with cooled walls, comprising:

selecting a throughput to be adapted to a required residence time,

selecting a temperature T_{eff} at which an energy consumption per unit weight of the inorganic materials, at the required residence time, is at a minimum, and

controlling the melting unit so that the temperature of the melt is in the range from T_{eff} - 20% to T_{eff} + 20%.